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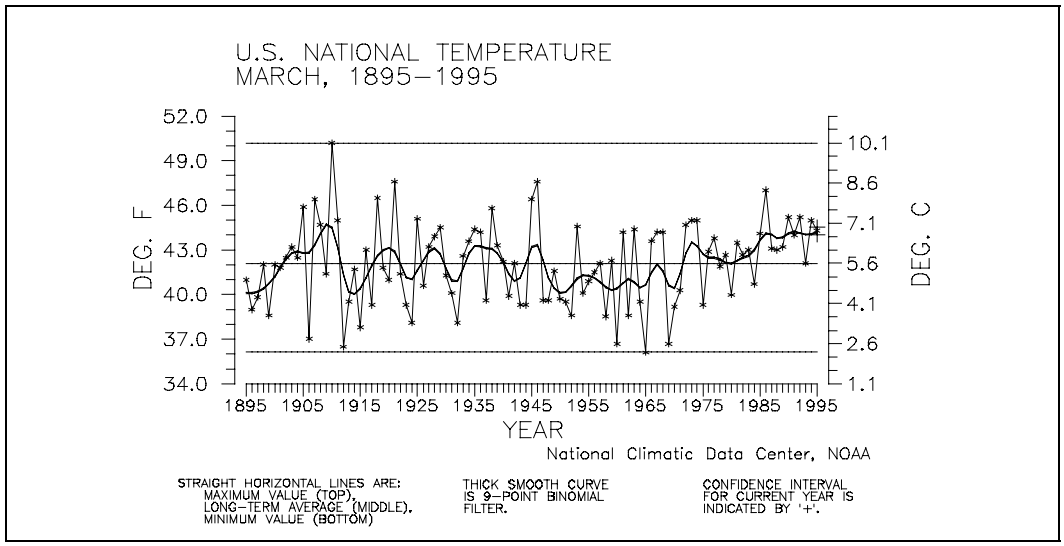
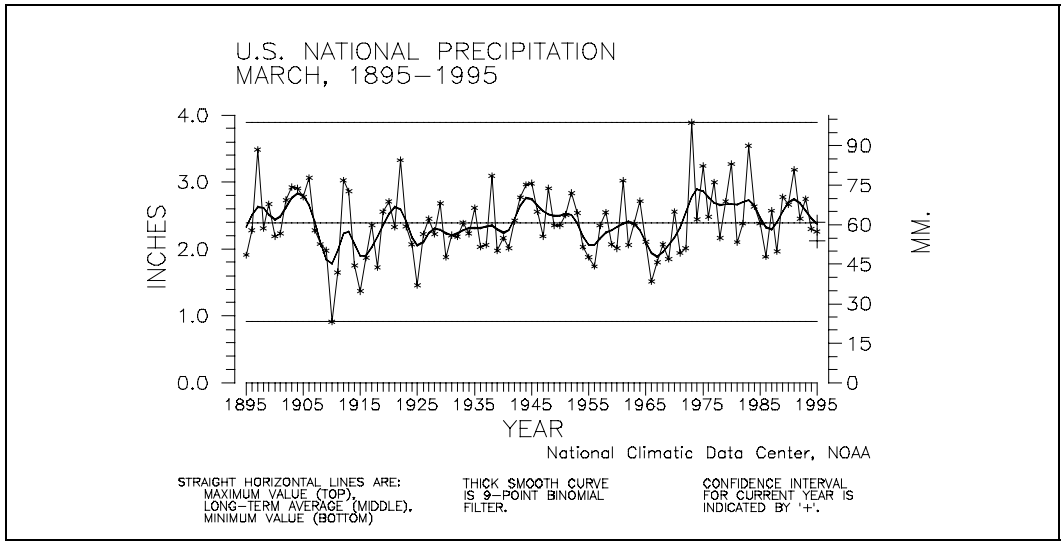
CLIMATE VARIATIONS BULLETIN





noaa NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION / NATIONAL ENVIRONMENTAL SATELLITE, DATA, AND INFORMATION SERVICE / NATIONAL CLIMATIC DATA CENTER ASHEVILLE, N.C.

This CLIMATE VARIATIONS BULLETIN (CVB) is a preliminary report that puts current monthly climate anomalies into historical perspective using climate databases archived at the National Climatic Data Center (NCDC). It is issued on a monthly basis. Supplemental sections are included which address seasonal and annual perspectives, when appropriate.

Current data are based on preliminary reports from First and Second Order airport stations obtained from the National Weather Service (NWS) Climate Analysis Center, and preliminary tornado statistics obtained from the NWS National Severe Storms Forecast Center. THE CURRENT DATA SHOULD BE USED WITH CAUTION. These preliminary data are useful for estimating how current anomalies compare to the historical record, however the actual values and rankings for the current year will change as the final data arrive at NCDC and are processed.

The following NCDC datasets are used for the historical data: the climate division drought database (TD-9640), the hurricane datasets (TD-9636 and TD-9697), the tornado dataset (STORM DATA), and the monthly station dataset (LCD supplemental files). It should be noted that the climate division drought database consists of monthly data for 344 climate divisions in the contiguous United States. These divisional values are calculated from the 6000+ station Cooperative Observer network.

The narrative, tables, and graphs in the CVB are also available via automated facsimile. The previous month's summary can be obtained after the tenth of the month by dialing 704-271-4570 and selecting the appropriate menu codes. A touch-tone fax machine is required.

If you have access to the Internet, copies of the CVB are available via both the NCDC's World Wide Web (WWW) server and the NCDC's anonymous FTP server.

NCDC's WWW server
URL for the CVB: http://www.ncdc.noaa.gov/publications/cvb/cvb.html

NCDC's anonymous FTP server
Machine: ftp.ncdc.noaa.gov
Directory: /pub/data/cvb

If you are a climate researcher and would like to order copies of the historical datasets used to make graphs of the type in this report, call 704-271-4994 or fax a letter to 704-271-4876 or mail a letter to the address given below, ATTN: Research User Services.

All other questions or requests for data should be made by calling 704-271-4800 or sending a fax to 704-271-4876 or by writing to:

National Climatic Data Center, NOAA
Federal Building
151 Patton Avenue, Room 120
Asheville, NC 28801-5001

If you use any of the information from this CVB, please identify "National Climatic Data Center, NOAA" as the source.

UNITED STATES MARCH CLIMATE IN HISTORICAL PERSPECTIVE

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Preliminary data for March 1995 indicate that temperature averaged across the contiguous United States was well above the long-term mean (see Figure 1). March 1995, with an averaged temperature of 44.3° (F), ranked as the 23rd warmest March since national records began in 1895. Ten of the last eleven years have had national March temperatures above to much above normal, which is unprecedented in the March record. The 1995 value is based on preliminary data, which has been shown to be within 0.26°F (0.14°C) of the final data over a 46-month period. This confidence interval is indicated in the figure by '+'. The darker smooth curve is a nine-point binomial filter that averages out the year-to-year fluctuations and shows the longer-term variations. About five percent (4.7%) of the country averaged much warmer than normal while none of the country averaged much colder than normal for March 1995.

Areally-averaged precipitation for the nation was slightly below the long-term mean, ranking March 1995 as the 43rd driest March on record. The preliminary value for precipitation is estimated to be accurate to within 0.14 inches (3.56 millimeters) and the confidence interval is plotted in Figure 2 as a '+'. About a sixth (15.2%) of the country experienced much drier than normal conditions while roughly a seventh (13.2%) was much wetter than normal.

Historical precipitation is shown in a different way in Figure 3. The March precipitation for each climate division in the contiguous U.S. was first standardized using the gamma distribution over the 1931-90 period. These gamma-standardized values were then weighted by area and averaged to determine a national standardized precipitation value. These national weighted values were then normalized over their period of record. Negative values are drier and positive values are wetter than the mean. This index gives a more accurate indication of how precipitation across the country compares to the local normal (60-year average) climate. The national standardized precipitation ranked March 1995 as the 38th driest such month on record.

In order to show more of a historical perspective, the precipitation and temperature rankings for the periods March 1995, February-March 1995, October 1994-March 1995, and April 1994-March 1995 for the nine climatically homogeneous regions, as well as the national rankings, are listed in Table 1.

The regional rankings for temperature for the month of March indicate that warmer than normal conditions were noted for the entire country, with all but three regions ranking in the warm third of the historical distribution. Those three---the West-North Central, South, and West regions---were within the middle-third of the historical distribution. March 1995 was the 14th warmest such month since 1895 for the Northeast region and the 18th warmest for the Central region.

March 1995 was dry for the eastern third of the country. It was the fourth driest such month since 1895 for the Northeast region (Figure 11), the eleventh driest March on record for the Central region and the 12th driest such month on record for the Southeast region. The western two-thirds of the country averaged near normal to wetter than normal for the month. It was the 8th wettest March for the West region (Figure 12) and the 23rd wettest such month for the Northwest region.

National averaged temperature for the three month period January-March for 1895-1995 is shown in Figure 4. The January-March 1995 temperature was much above the long-term mean ranking as the 6th warmest such period since 1895. Six of the last ten such January through March periods have had temperatures much above the long-term mean.

Figure 5 shows the historical January-March national averaged precipitation. In 1995 this was the 47th wettest such three-month period since records began. When the local normal climate is taken into

account, January-March 1995 ranked as the 45th driest such period since 1895 (Figure 6).

Figure 7A shows, in illustrative map form, the March 1995 temperature rankings for the 48 contiguous states. Only two states, Rhode Island and New Hampshire, were within the top ten warmest category of the historical distribution for the month of March. Both ranked tenth warmest for the 101-year period of record. Thirty-four others were within the warm third of the historical distribution. No state was within the top ten cool category or the cool third of the historical distribution for the month of March.

March 1995 state ranks for precipitation are shown in Figure 7B. It was the driest March on record for Wyoming, third driest for Massachusetts, and Pennsylvania, fourth driest for New York, and fifth driest for West Virginia and the two Carolinas. Twenty-one other states were within the dry third of the historical distribution. Four states were within the top ten wet category including the sixth wettest March on record for Louisiana, seventh wettest for California, eighth wettest for South Dakota and the ninth wettest March since 1895 for North Dakota. Ten other states were within the wet third of the historical distribution. It must be stressed that, when the final values for precipitation are calculated, these ranks *WILL* change due to the use of a denser station network. ***It should also be noted that the March state precipitation ranks are preliminary and should be used with considerable caution due to the high variability of precipitation on a small space and time scale.***

Temperature and precipitation ranks for the three-month period, January-March 1995, are shown in map form in Figures 8A and 8B. Fourteen states experienced their tenth warmest or warmer such three-month period (Figure 8A). Included in this statistic was the warmest year-to-date on record for New Hampshire, third warmest such period for Nevada and New Mexico, fourth warmest for Oregon, Utah and Vermont, and fifth warmest for Idaho. Thirty-one other states were within the warm third of the historical distribution. No states were within the cool third of the historical distribution for this three-month period. It was the sixth driest year-to-date for Wyoming, Pennsylvania, and New Jersey while twenty other states were within the dry third of the historical distribution for the January through March period. Only one state (California, at eighth wettest) was within the top ten wettest category, while seven others were within the wet third of the historical distribution.

There was a slight increase in the national percent area of severe to extreme long-term drought during March 1995, while the decreasing trend in the percentage of the country experiencing severe to extreme long-term wet spell of the previous three months came to a halt. Nationally, long-term drought conditions (as defined by the Palmer Drought Index) for March 1995 increased to about six percent of the country while the percent coverage of severe to extreme wet area hovered around ten percent (Figure 9). Table 2 lists the precipitation ranks and statistics for selected river basins for the 1994-1995 Hydrologic Year thus far. The core wet area included portions of the northern Great Plains, with patchy wetness in the Southeast, Southwest, and Pacific Northwest. The Palmer dry areas included patches of the interior Northwest, northern and central Rockies, central Appalachians, and Ohio Valley.

Table 3 shows extremes, 1961-90 normals, and the March 1995 values for both precipitation and temperature for the nine regions and the contiguous U.S.

Precipitation averaged across the Primary Corn and Soybean Belt was below normal for March 1995, the initial month of the growing season (Figure 10). The last three years have had a dry start to the growing season.

According to preliminary data from the National Weather Service's National Severe Storms Forecast Center, there were 60 tornadoes across the contiguous United States in March 1995. The 1953-1994 average tornado count for March is 53. Only eight tornadoes were reported in March 1969 while 180 were documented in March 1976. For the year-to-date, 114 tornadoes have occurred. The average tornado count for the January-March period is 87. The January-March extremes are 16 in 1969 and 229 in 1976. It should be noted that the preliminary tornado count is generally higher than the final count.

TABLE 1. PRECIPITATION AND TEMPERATURE RANKS, BASED ON THE PERIOD 1895-1995. 1 = DRIEST/COLDEST, 101 = WETTEST/WARMEST FOR MARCH 1995, 101 = WETTEST/WARMEST FOR FEB-MAR 1995, 100 = WETTEST/WARMEST FOR OCT 1994-MAR 1995, 100 = WETTEST/WARMEST FOR APR 1994-MAR 1995.

REGION	MAR 1995	FEB-MAR 1995	OCT 1994-MAR 1995	APR 1994-MAR 1995
PRECIPITATION:				
NORTHEAST	4	2	2	26
EAST NORTH CENTRAL	52	30	37	60
CENTRAL	11	8	22	32
SOUTHEAST	12	23	63	79
WEST NORTH CENTRAL	77	53	96	41
SOUTH	61	30	77	63
SOUTHWEST	56	51	78	63
NORTHWEST	79	36	41	28
WEST	94	67	91	90
NATIONAL	43	13	71	56
TEMPERATURE:				
NORTHEAST	88	66	93	95
EAST NORTH CENTRAL	80	77	97	95
CENTRAL	84	76	97	79
SOUTHEAST	77	60	82	66
WEST NORTH CENTRAL	64	79	87	94
SOUTH	60	76	91	86
SOUTHWEST	77	97	91	100
NORTHWEST	72	96	76	96
WEST	65	93	72	90
NATIONAL	79	87	99	98

TABLE 2.
STATISTICS FOR SELECTED RIVER BASINS: PRECIPITATION RANKING FOR OCT-MAR 1994-95, WHERE RANK OF 1 = DRIEST, 100 = WETTEST, BASED ON THE PERIOD 1895 TO 1995, AREAL PERCENT OF THE BASIN EXPERIENCING SEVERE OR EXTREME LONG-TERM (PALMER) DROUGHT, AND AREAL PERCENT OF THE BASIN EXPERIENCING SEVERE OR EXTREME LONG-TERM (PALMER) WET CONDITIONS, AS OF MARCH 1995.
RIVER BASIN REGIONS AS DEFINED BY THE U.S. WATER RESOURCES COUNCIL.

RIVER BASIN	PRECIPITATION RANK	% AREA DRY	% AREA WET
MISSOURI BASIN	92	4.0%	14.4%
PACIFIC NORTHWEST BASIN	73	21.6%	9.0%
CALIFORNIA RIVER BASIN	89	.0%	8.8%
GREAT BASIN	92	.0%	13.8%
UPPER COLORADO BASIN	42	68.4%	.0%
LOWER COLORADO BASIN	90	10.4%	18.3%
RIO GRANDE BASIN	74	18.3%	20.6%
ARKANSAS-WHITE-RED BASIN	73	.0%	.0%
TEXAS GULF COAST BASIN	90	.0%	.0%
SOURIS-RED-RAINY BASIN	96	.0%	73.9%
UPPER MISSISSIPPI BASIN	58	.0%	10.3%
LOWER MISSISSIPPI BASIN	57	.0%	.0%
GREAT LAKES BASIN	22	.0%	.0%
OHIO RIVER BASIN	13	7.3%	.0%
TENNESSEE RIVER BASIN	28	.0%	.0%
NEW ENGLAND BASIN	10	4.5%	.0%
MID-ATLANTIC BASIN	4	1.1%	.0%
SOUTH ATLANTIC-GULF BASIN	71	.0%	16.8%

TABLE 3. EXTREMES, 1961-90 NORMALS, AND 1995 VALUES FOR MARCH

	PRECIPITATION (INCHES)					
	DRIEST		WETTEST		NORMAL	1995
REGION	VALUE	YEAR	VALUE	YEAR	PCPN	
NORTHEAST	.71	1915	6.56	1936	3.14	1.57
EAST NORTH CENTRAL	.21	1910	3.50	1977	1.89	1.72
CENTRAL	.55	1910	6.91	1897	3.92	2.22
SOUTHEAST	1.54	1910	8.89	1980	4.75	2.73
WEST NORTH CENTRAL	.39	1994	2.10	1987	1.02	1.15
SOUTH	.89	1966	6.28	1973	2.83	3.07
SOUTHWEST	.20	1956	2.90	1905	1.02	.96
NORTHWEST	.58	1965	5.46	1904	2.72	3.12
WEST	.09	1914	6.28	1907	2.23	4.25
NATIONAL	.91	1910	3.89	1973	2.47	2.26

	TEMPERATURE (DEGREES F)					
	COLDEST		WARMEST		NORMAL	1995
REGION	VALUE	YEAR	VALUE	YEAR	TEMP	
NORTHEAST	25.1	1916	42.5	1946	33.4	36.6
EAST NORTH CENTRAL	18.8	1960	42.2	1910	29.9	33.4
CENTRAL	29.0	1960	53.0	1946	43.0	46.6
SOUTHEAST	44.9	1960	63.2	1945	54.7	57.6
WEST NORTH CENTRAL	19.1	1965	43.4	1910	31.2	31.8
SOUTH	43.7	1915	62.6	1907	53.6	54.4
SOUTHWEST	35.6	1917	49.0	1910	41.9	44.1
NORTHWEST	31.0	1917	46.0	1934	38.6	39.9
WEST	39.5	1897	55.0	1934	46.3	47.3
NATIONAL	36.1	1965	50.2	1910	42.4	44.3

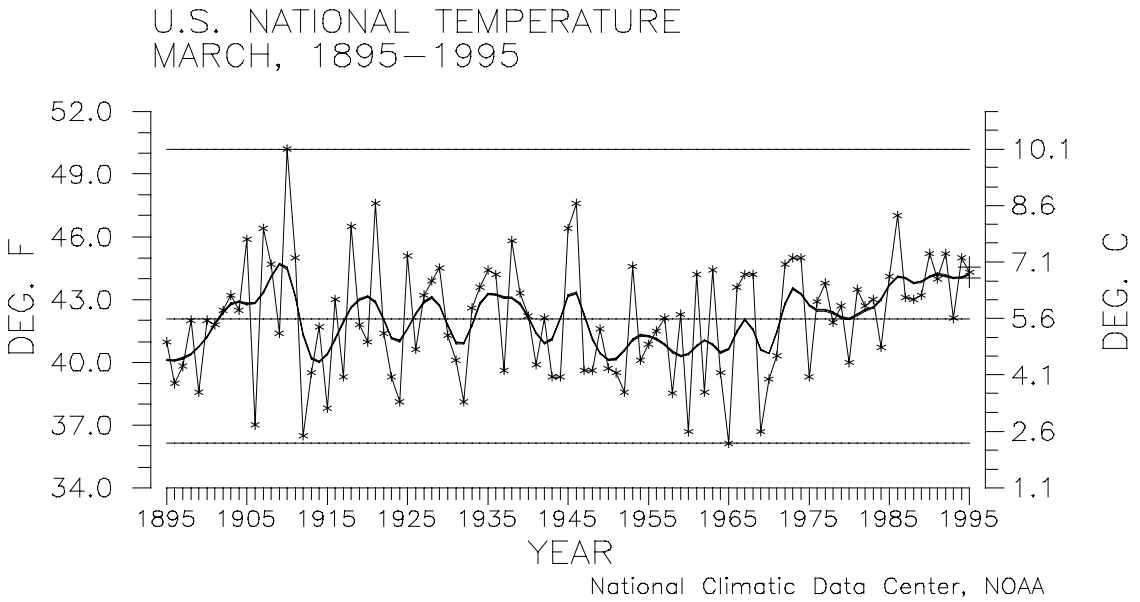

Figure 1

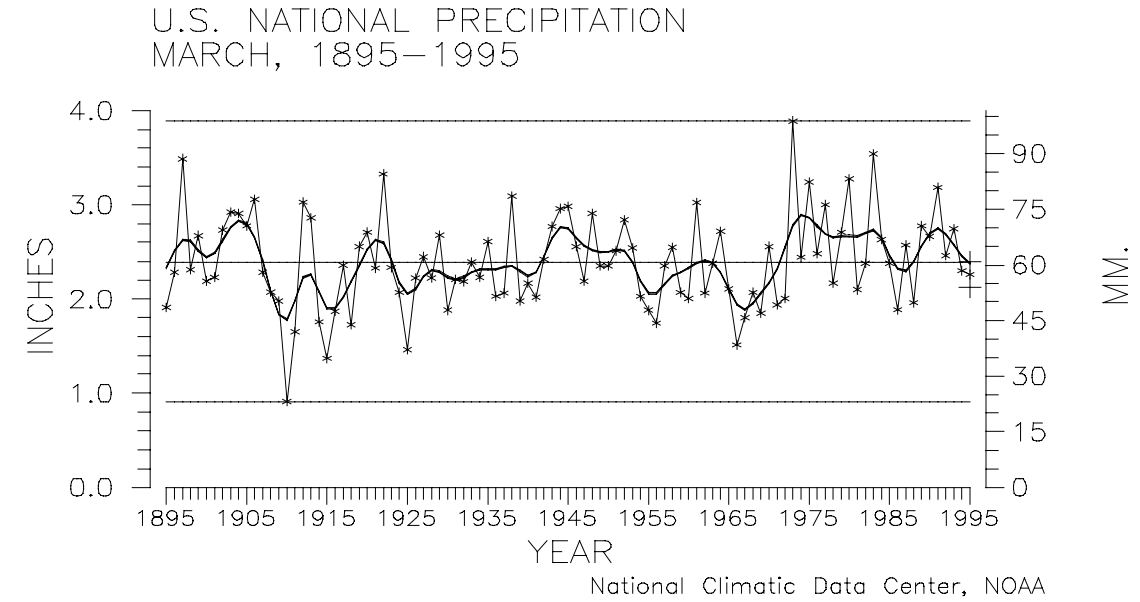

Figure 2

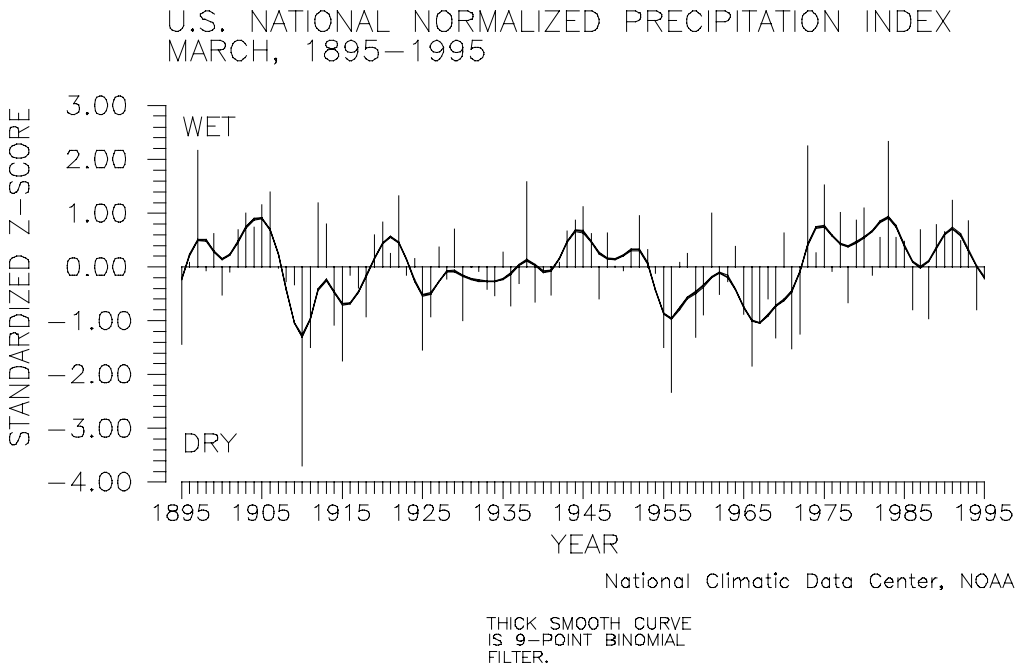

Figure 3

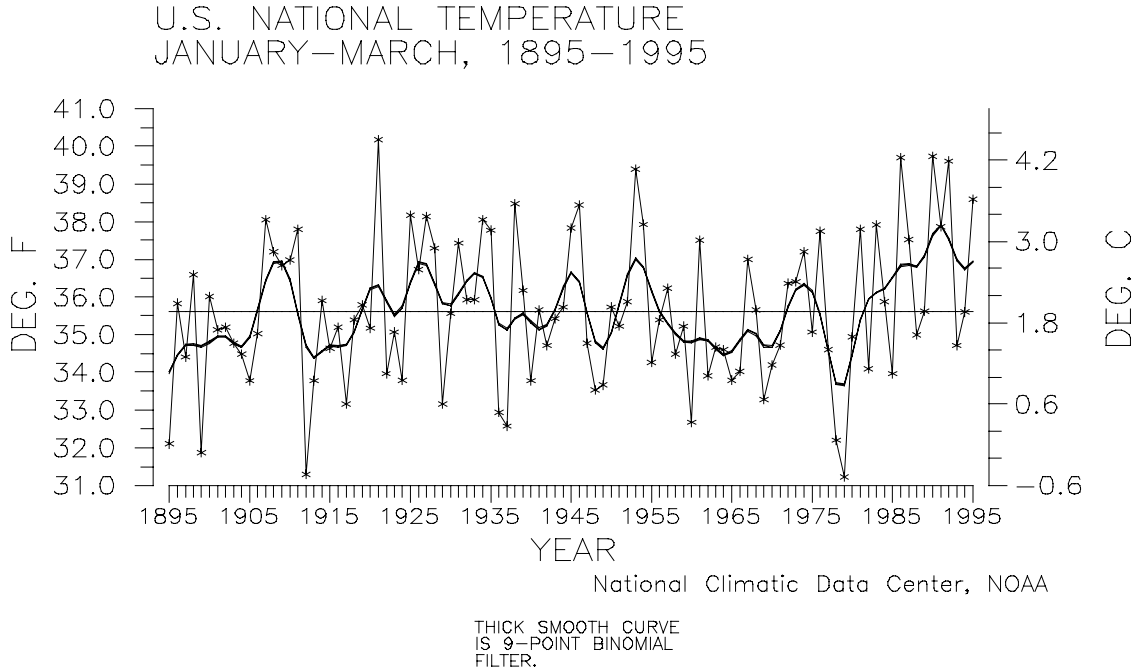

Figure 4

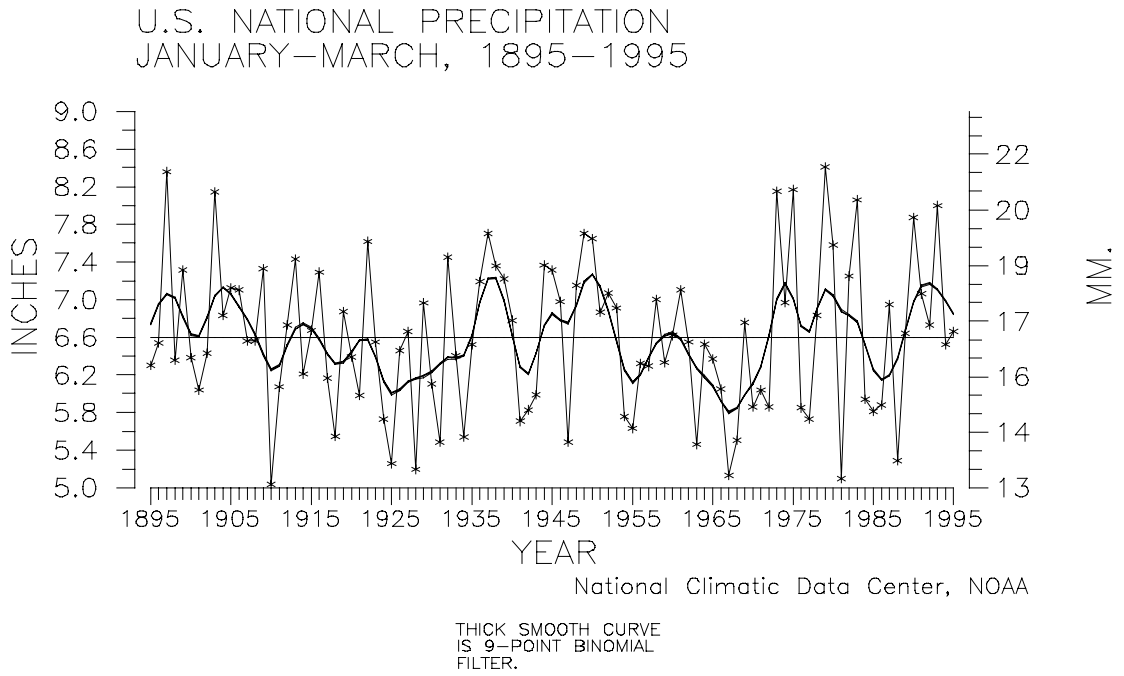

Figure 5

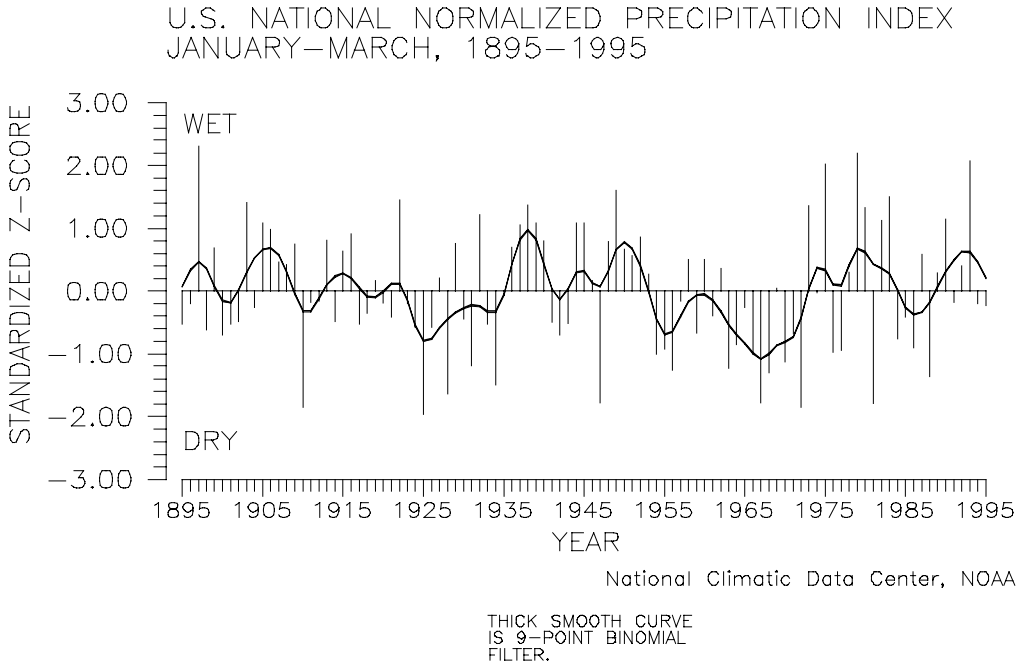

Figure 6

MARCH 1995 STATEWIDE RANKS

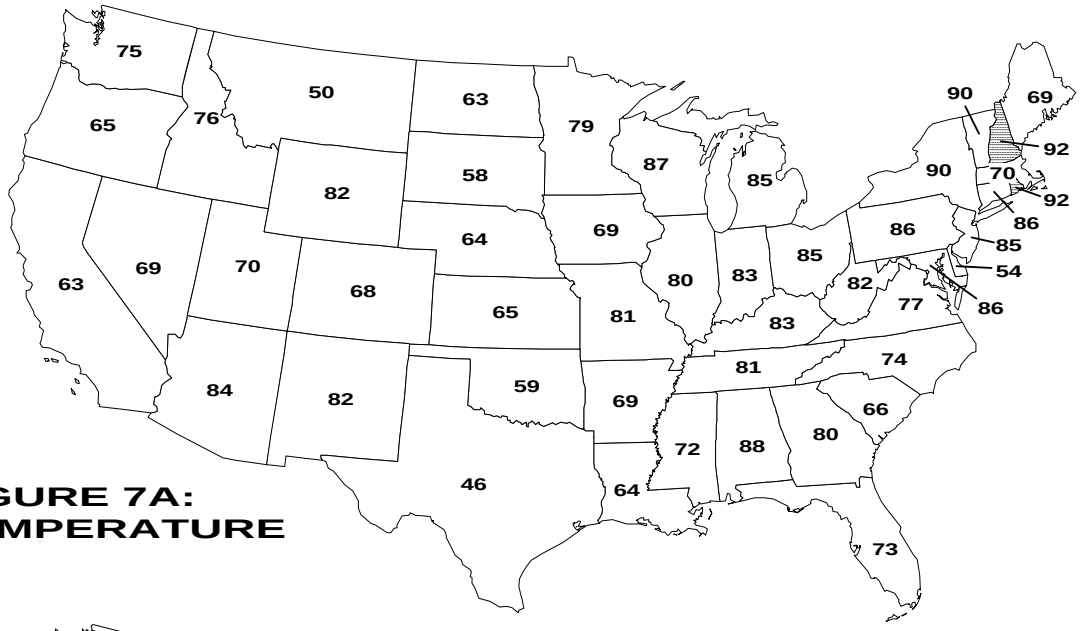

FIGURE 7A: TEMPERATURE

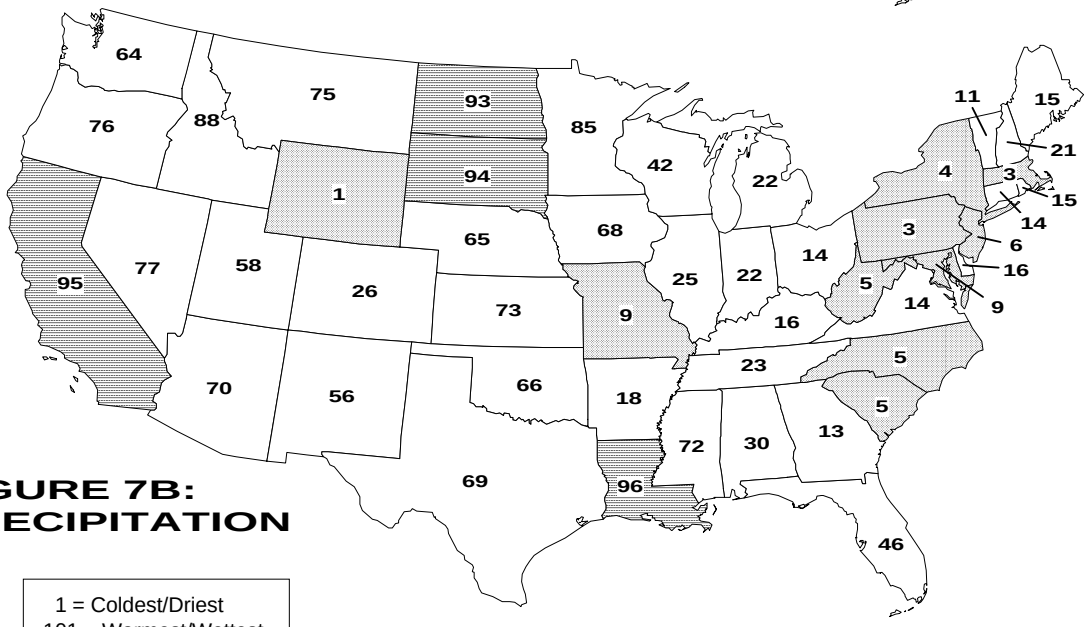

FIGURE 7B: PRECIPITATION

1 = Coldest/Driest
101 = Warmest/Wettest

National Climatic Data Center, NOAA

Temperature and Precipitation Ranks for the contiguous United States. Each state is ranked based on its data from 1895-1995. States having a rank of top ten coldest or driest (rank 1-10) or top ten warmest or wettest (rank 92-101) are shaded.

JAN-MAR 1995 STATEWIDE RANKS

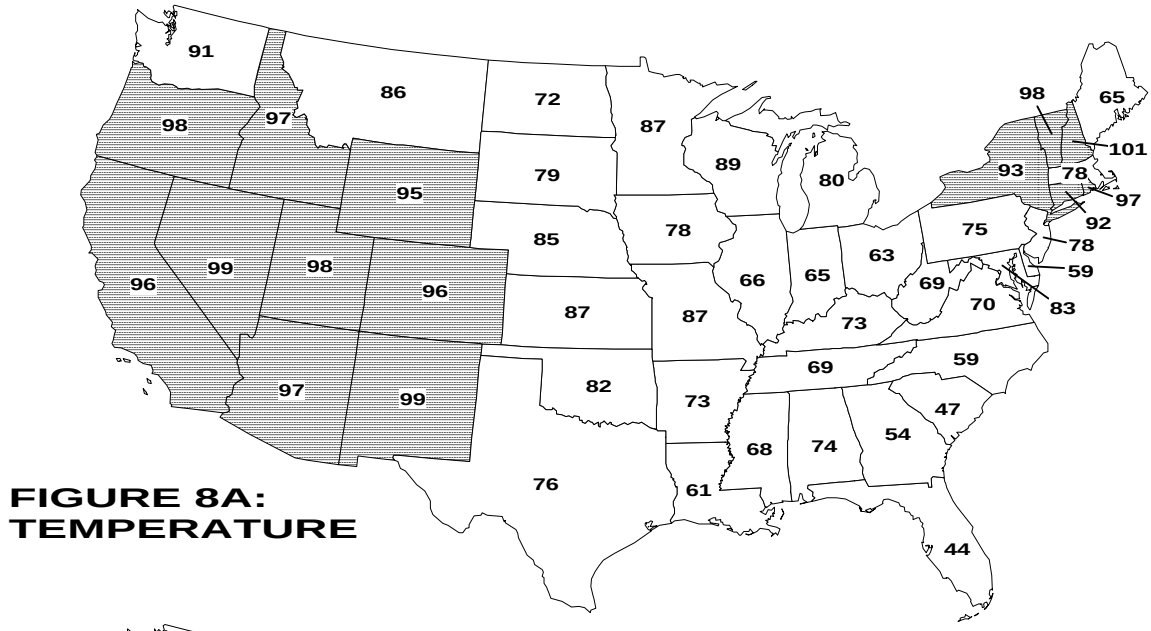

FIGURE 8A: TEMPERATURE

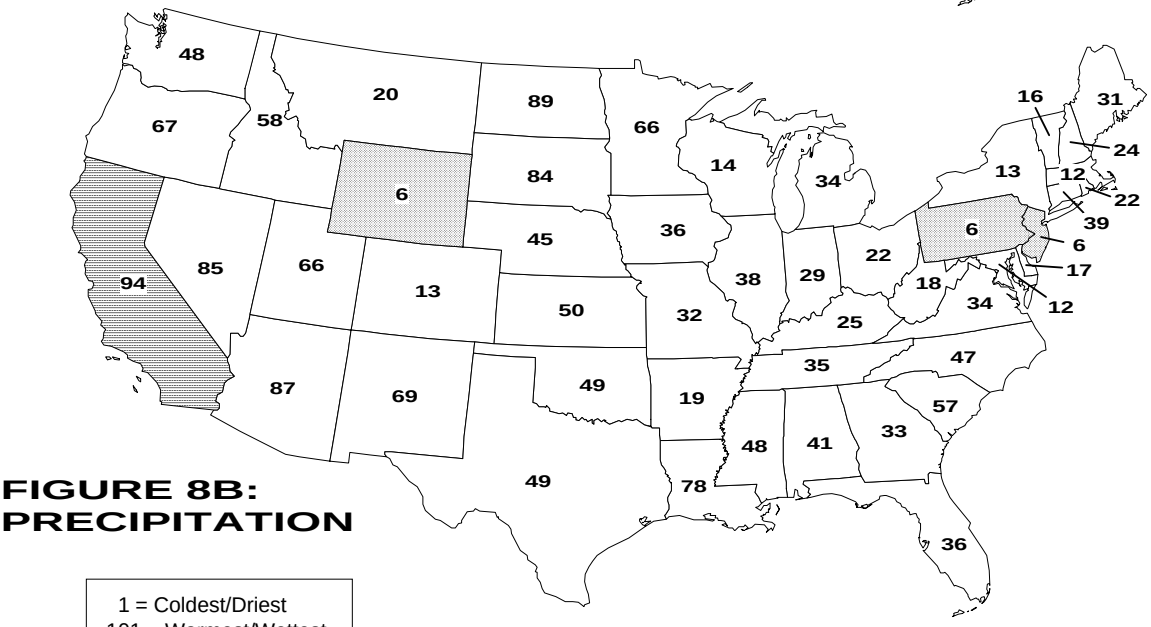

FIGURE 8B: PRECIPITATION

1 = Coldest/Driest
101 = Warmest/Wettest

National Climatic Data Center, NOAA

Temperature and Precipitation Ranks for the contiguous United States. Each state is ranked based on its data from 1895-1995. States having a rank of top ten coldest or driest (rank 1-10) or top ten warmest or wettest (rank 92-101) are shaded.

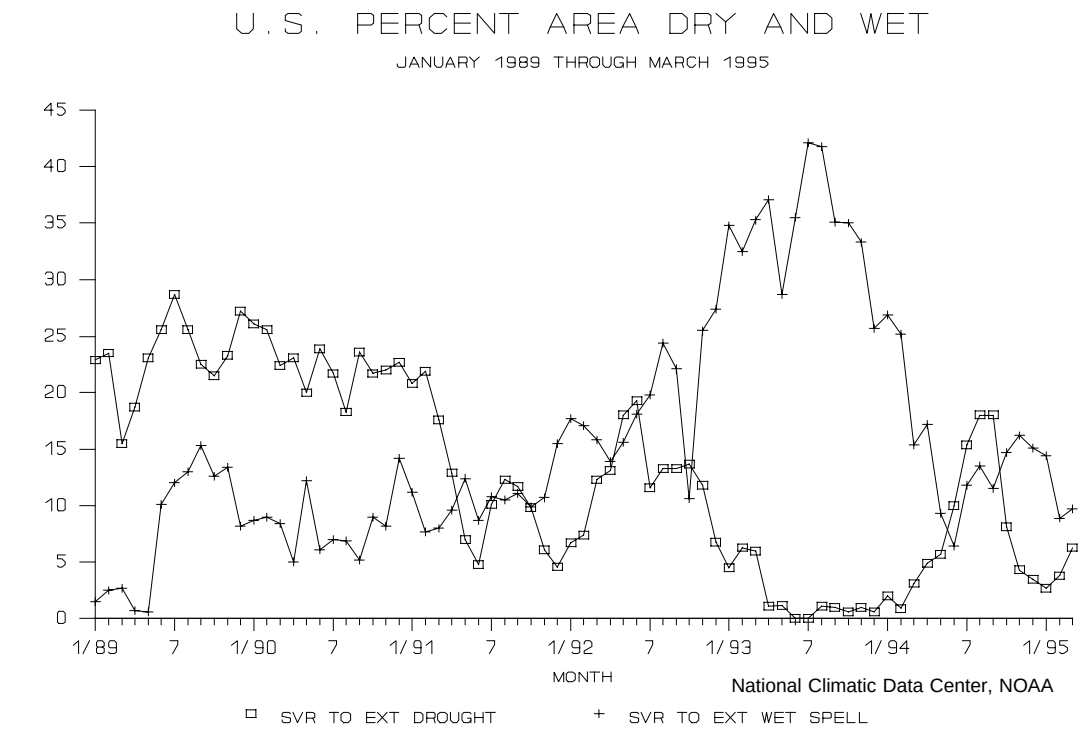

Figure 9

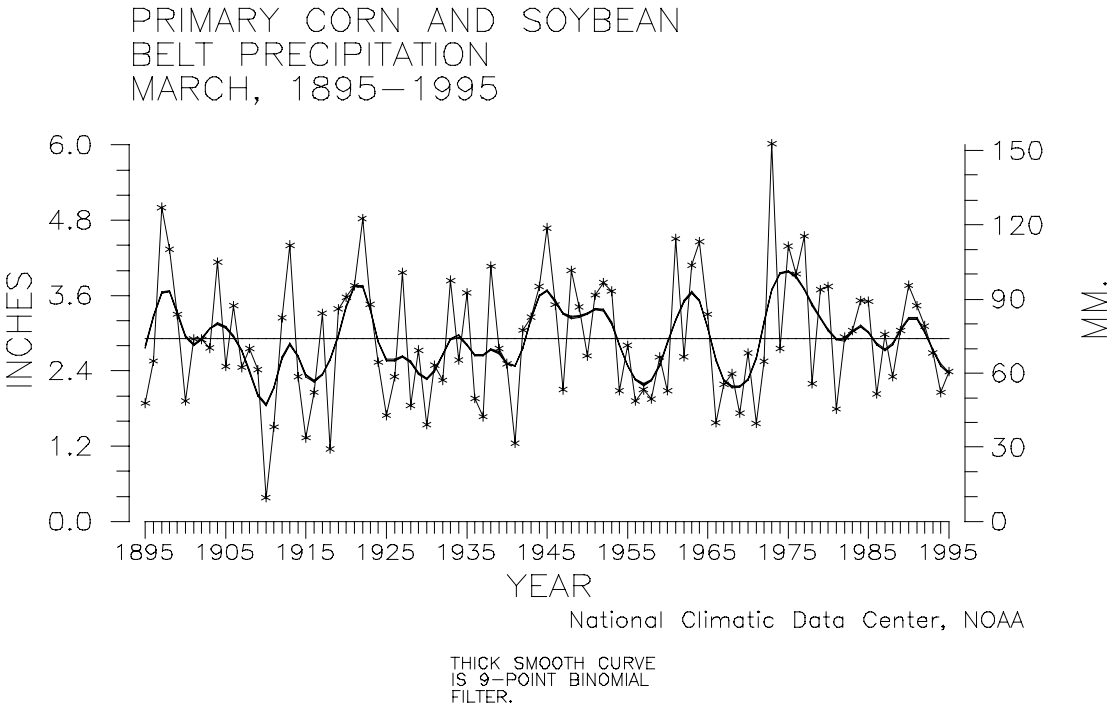

Figure 10

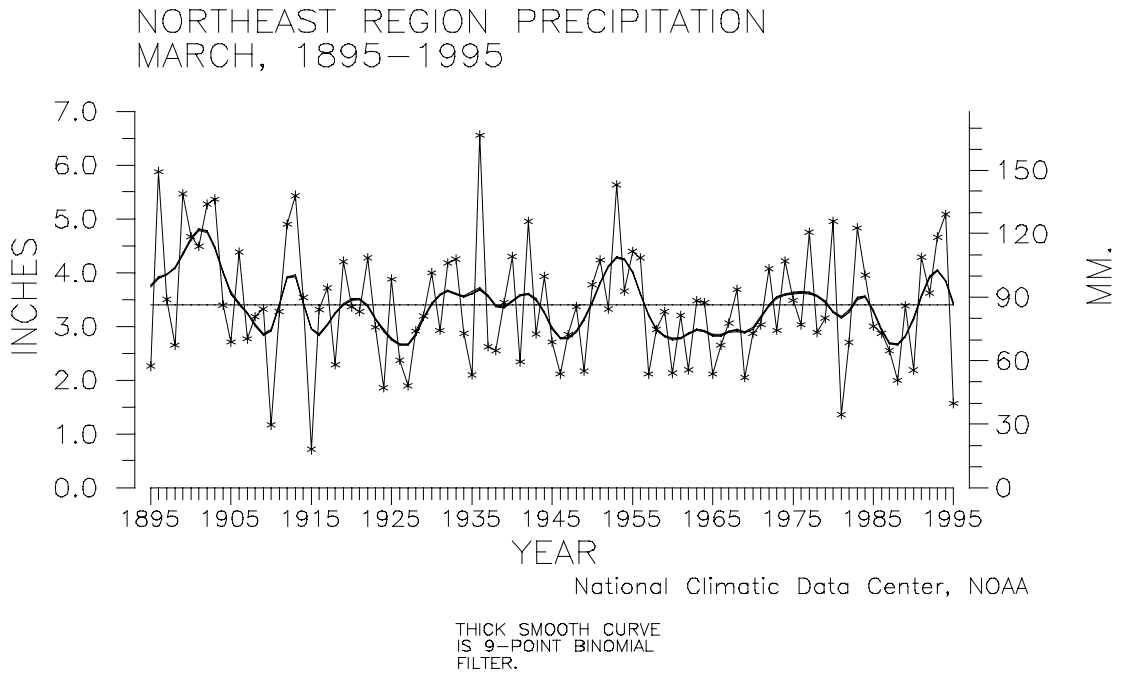

Figure 11

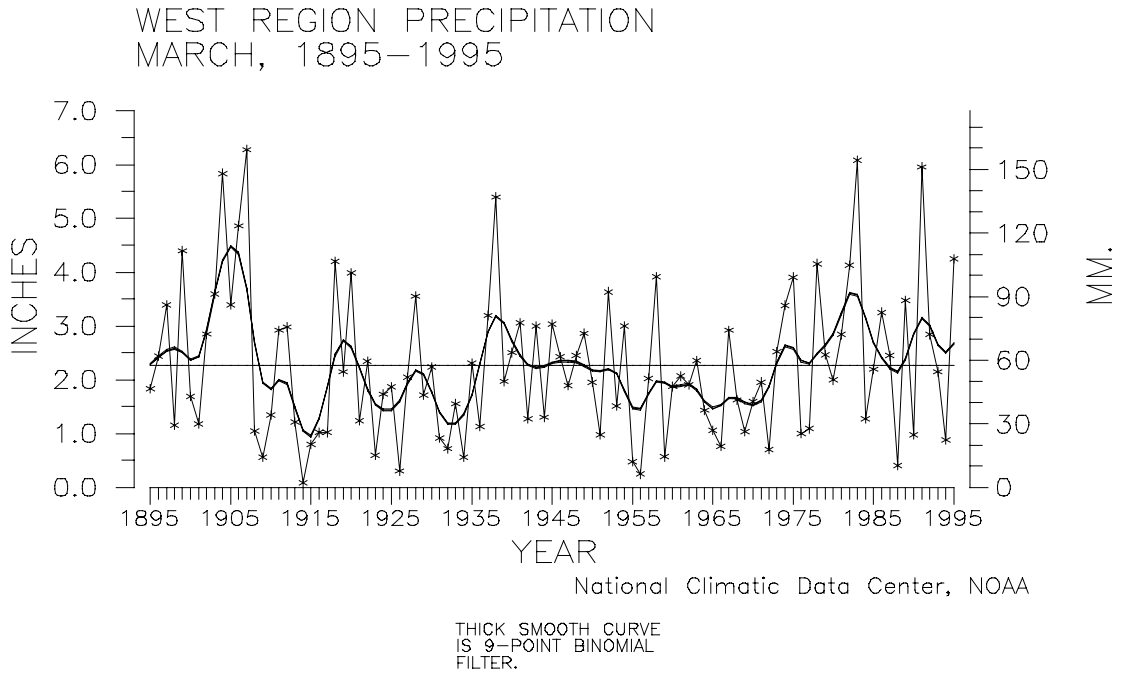

Figure 12